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10/563,369

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Kazunobu Sakai

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WENDEROTH, LIND & PONACK L.L.P.  
2033 K. STREET, NW  
SUITE 800  
WASHINGTON, DC 20006

EXAMINER

SEMENENKO, YURIY

ART UNIT

PAPER NUMBER

2841

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/563,369

Applicant(s)

SAKAI, KAZUNOBU

Examiner

Yuriy Semenenko

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>04/13/06;01/31/06</u> | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities:

page 47, line 18: it should be – surface 7a -

Appropriate correction is required.

### ***Claim Objections***

2. Claims 7-11 are objected to because of the following informalities:

Claim 7, page 10, lines 6-7: "component mounting-side surface" should be changed to – the component mounting-side surface - for proper antecedence basis.

Claim 7, page 11, line 8: "by reflected light" should be changed to – by a reflected light - for proper antecedence basis.

Claim 7, page 11, line 16: "image data" should be changed to – a image data - for proper antecedence basis.

Claims 8-10 depend on claim 7 and have same deficiency.

Claim 11, page 13, lines 1-2: "the inspection-use component" should be changed to – a inspection-use component - for proper antecedence basis.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1, 6, 7 and 11: It is unclear why material of the inspection-use board has different properties on its surfaces. If "an inspection-use board is formed from a light transmitting material" then it should have both identical surfaces partially transmitting light and partially reflecting light equally on both of the surfaces or if "an inspection-use board has a reflecting surface disposed on a surface opposed to its component mounting-side surface" which means these surfaces are different from each other by optical property then it should be some limitation points out on such difference between these surfaces.

Claims 2-5 depend on claim 1 and have same deficiency. Claims 8-10 depend on claim 7 and have same deficiency.

The claim language needs to be clarified.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7, 8 and 11 are rejected under 35U.S.C. 103(a) as being unpatentable over Ito (JP-2000-341000) hereinafter Ito.

As to claims 7 and 11: Ito discloses in Fig. 3 an apparatus for inspecting a component mounting accuracy in a component mounting apparatus W for mounting a component (b, Fig. 4) held by a component holding member 9, 10, Fig.3 on a board, comprising: an inspection-use board 2, Fig. 5 which is held by the component mounting apparatus in place of the board and formed from a light transmitting material (glass, [0010]), and which has a reflecting surface (at bottom of the plate 2) disposed on a surface opposed to its component mounting-side surface (at top of the plate 2) in a state of facing the component mounting-side surface; an inspection-use component (b, Fig. 4) which is fed to the component mounting apparatus in place of the component and forms an almost rectangular parallelepiped shape having an irreflexive surface (irreflexive surface is a surface opposite to bump) as one surface and a reflecting surface (reflecting surface is a surface of the bump's surface) as a surface opposed to the one surface, and which is held by the component holding member 9, 10, Fig. 3 with its held surface as the irreflexive surface and is mounted on the inspection-use board 2 in such a way that the reflecting surface faces the component mounting-side surface of the inspection-use board; picking up an image of the inspection-use component formed by reflected light created by the applied light; a board image pickup device 22, Fig. 9 for applying light [0027] to a component mounting-side surface of the inspection-use board 2 with the inspection-use component (b) mounted in a component mounting position; a holding posture recognition section (20 and [0027], [0028], [0033], [0034]) (for recognizing a posture of the inspection-use component held by the component holding member through recognizing image data of a real image of the inspection-use component in a state of being held, so as to correct posture-displacement between the recognized holding posture and a reference holding posture;- intended use) a mounting position recognition section (20 and [0027], [0028], [0033], [0034]) (for recognizing an actual mounting position of the inspection-use component through recognizing image data of

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the outline of the inspection-use component in a state of being mounted – intended use); and a mounting accuracy operation section (20 and [0027], [0028], [0033], [0034]) (for obtaining the component mounting accuracy through calculating a difference between the actual mounting position recognized by the mounting position recognition section and the preset mounting position of the inspection-use component – intended use).

Although Ito does not teach separate a component image pickup device, for applying light to the reflecting surface of the inspection-use component but instead uses same image pickup device for both a component and a board it has been held in re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); and in re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Ito to include in his invention a component image pickup device for applying light to the reflecting surface of the inspection-use component motivated by its known suitability for its intended use. See MPEP §2144.07.

Instant modified Ito clearly teaches the Applicant's claimed "process inspecting" step. However, the Examiner notes that a limitation "so as to transmit the applied light through the component mounting-side surface and reflect the light on the reflecting surface, and picking up an image of an outline of the inspection-use component formed by reflected light coming from around the inspection-use component through the component mounting-side surface" step is a process limitation in the product claim. Such a process limitation defines the claimed invention over the prior art only to the degree that it defines the product itself. A process limitation cannot serve to patentably distinguish the product over the prior art, in the case that the product is the same as, or

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obvious over, the prior art. See Product-by-Process in MPEP 2113 and 2173.05(p) and In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985).

As to claim 8: Ito, as modified discloses the apparatus for inspecting the component mounting accuracy having all of the claimed features as discussed above with respect claim 7, wherein the light transmitting material is a glass material [0010].

### ***Allowable Subject Matter***

5.1. Claims 9 and 10 are objected to as being dependent upon a rejected base claim 7, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

As to claim 9: Ito, as modified discloses the apparatus for inspecting the component mounting accuracy having all of the claimed features as discussed above with respect claim 7. But “the reflecting surface of the inspection-use board is a specular reflecting surface for specular reflection of the applied light, and the inspection-use board has a diffusion layer for diffusing the specular-reflected light.” is not disclosed by the prior art of record.

As to claim 10: Ito, as modified discloses the apparatus for inspecting the component mounting accuracy having all of the claimed features as discussed above with respect claim 7. But “the reflecting surface of the inspection-use board is a diffuse reflecting surface (Sa-) for reflecting the applied light with diffusing.” is not disclosed by the prior art of record.

5.2. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, but would be allowable if rewritten to fixed deficiency discussed above in paragraph 3.

As to claim 1-5: Limitation “mounting the inspection-use component by the component holding member in such a way that the reflecting surface of the inspection-use

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component is disposed in a component mounting position on a component mounting side-surface of an inspection-use board which is formed from a light transmitting material and which has a reflecting surface disposed on a surface opposed to the component mounting side-surface in a state of facing the component mounting side-surface; and ....while applying light to the component mounting-side surface of the inspection-use board so as to transmit the applied light through the component mounting-side surface and reflect the applied light on the reflecting surface, picking up an image of an outline of the inspection-use component formed by reflected light coming from around the inspection-use component through the component mounting-side surface; " in combination with other claimed limitations in independent claim 1 are not disclosed or suggested by the prior art.

Claims 2-5 are either directly or indirectly dependent upon claim 1.

As to claim 6: Limitation "mounting the component by the component holding member in a component mounting position on a component mounting side-surface of an inspection-use board, which is formed from a light transmitting material and which has a reflecting surface disposed on a surface opposed to the component mounting side-surface in a state of facing the component mounting side-surface; while applying light to the component mounting-side surface of the inspection-use board so as to transmit the applied light through the component mounting-side surface and reflect the applied light on the reflecting surface, picking up an image of an outline of the component formed by reflected light coming from around the component through the component mounting-side surface" in combination with other claimed limitations in independent claim 6 are not disclosed or suggested by the prior art.

### ***Relevant Art***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koike - US 6739036; Kawada - US 6718626;



Hata et al. – US 6691401; Kawada – PGPub. No: 2004/0037055;  
Nagao et al. – US 7089656;

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutiérrez can be reached on (571)- 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS



TUAN T. DINH  
PRIMARY EXAMINER

11/23/07.